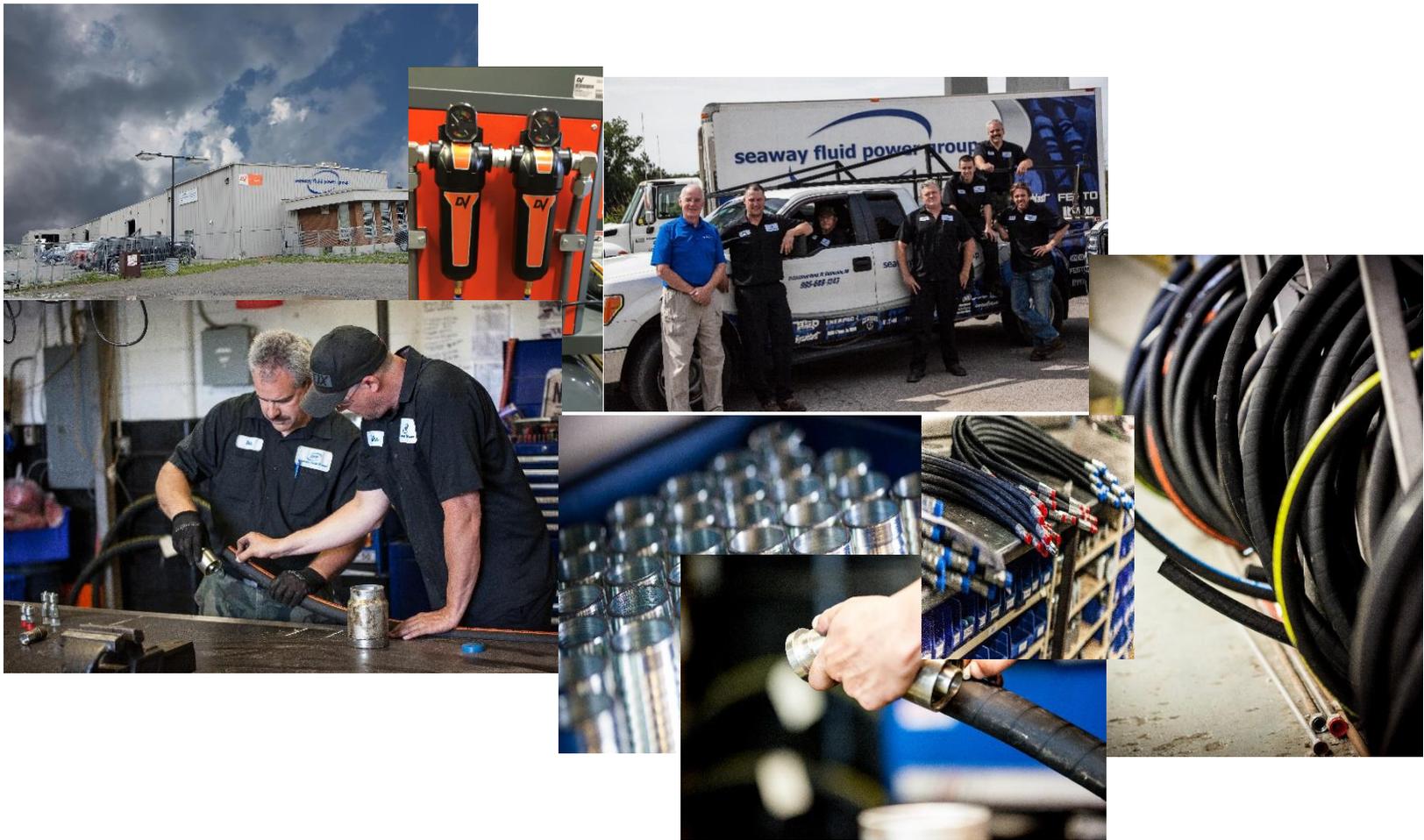


TEFLON (PTFE) HOSE

Characteristics & Selection Criteria



About Convuluted

Teflon Hose

The chemical PTFE was originally discovered in 1938, as many discoveries are quite by accident. The name Teflon was registered as the trademark for PTFE in 1941. Since that time the PTFE and Teflon names have been used interchangeably concerning the chemical.

Characteristics of

Teflon Hose

Teflon has some unique traits that have led to its wide adoption in a variety of industrial and consumer applications. A summary of these traits would include the following:

- **Chemically Inert:** What this means is that Teflon does not react to other chemicals. As a result, Teflon does not transfer any odours, colours or tastes to whatever fluid is being transported in a PTFE hose. As a result of this trait, Teflon is frequently utilized as a liner in hoses where the application includes the transport of chemicals, acids or alkalis.

Furthermore, as Teflon does not react to other chemicals, it is less prone to deterioration resulting in an extended useful life. In addition to PTFE hose being chemically inert, it also does not age with exposure to the environment.

- **Corrosion resistance:** This trait of PTFE hose protects a variety of

metal surfaces from otherwise damaging interactions with corrosive materials.

- **Sanitary:** PTFE hose is easy to clean given that the cleaning products used will not interact with the hose lining. For this reason, Teflon is also frequently used as a gasket material.
- **Flexible:** Teflon hose is highly flexible. As a result, it is resistant to wear from repeated flexing.
- **Heat Resistant:** With a melting point of 327°C PTFE/Teflon hose is well suited for use in applications where high levels of heat are present.
- **Lower Lifetime Costs:** As a result of the above properties, [PTFE hose](#) has a lower lifecycle cost than more traditional hose types as it lasts far longer in the vast majority of applications. The tougher the operating environment, the larger the lifecycle cost benefit associated with Teflon hose.
- **Low Permeability:** This aspect of Teflon reflects its ability to create a wall that keeps whatever fluid is being transported intact resulting in the maintenance of the quality of the transport fluid. Low permeability serves to prevent the loss of fluid characteristics such as colour or flavour in food.
- **Minimal Friction:** Teflon has one of the absolute lowest coefficients

of friction of any known solid material. As a result, nothing sticks to it. Given this unique aspect of Teflon, it is frequently used for the transport of high viscosity fluids.

- **Non-Toxic:** This trait is related to the chemical inertness of Teflon noted above. The benefit here is that the lack of interaction that PTFE hoses have with various chemicals makes them attractive in those industries that require hygienic solutions such as food and beverage or the pharmaceutical industry.
- **Resists Deterioration:** Teflon will not deteriorate in extreme weather and ages very slowly when compared to alternative hose compounds. This ability to resist deterioration extends to harsh chemical and heat fluctuation environments.
- **UV Resistant:** Ultraviolet radiation can be a real problem for those applications where the hose is exposed to the sun's radiation in outdoor settings. Teflon is UV resistant meaning that it will weather the onslaught of UV rays better than most other materials. This results in longer service life and lowers costs overall for these types of applications.
- **Water Resistant:** Teflon is highly water resistant with an absorption level of less than 0.01%.

Teflon Hose Selection Criteria

Smooth Bore vs. Convuluted

The main choice to be made when considering Teflon hose is whether to go with a smooth bore or convuluted hose. In making this decision, there are several factors to consider, including:

- **Cost**

Smooth bore PTFE hose tends to be lower cost than convuluted PTFE hose.

- **Hose Diameter**

Smooth bore Teflon hoses tend to be provided in smaller hose diameter sizes, typically one inch or less.

- **Flexibility**



Convuluted PTFE hoses are typically more flexible than smooth bore PTFE hose. With convuluted Teflon, the convolutions spiral down the hose increasing flexibility.

▪ **Flow Control**

For applications where very precise flow control is a requirement, smooth bore PTFE hose may be the better offering. This is due to the smooth nature of the inner core of the hose which facilitates better flow management.

▪ **Draining**

As noted, smooth bore Teflon hose has a smooth inner core. This makes this type of hose far better for those applications where draining of the hose is important.

▪ **Collapse**

Convoluted Teflon hose performs far better in vacuum based environments in terms of hose collapse than does smooth bore Teflon hose.

▪ **Kinking**

Convoluted PTFE hose is less susceptible to kinking due to the nature of the inner wall of these hoses which facilitates bending of the hose without leading to kinking. It should also be noted that the thicker the wall of the hose the greater its resistance to kinking. Concerns in this area may also be addressed via the addition of spring guards to the hose at those points where the potential for kinking is a concern.

Once a decision has been made concerning convoluted or smooth bore hose, the following additional factors should be considered.

Conductivity

PTFE hoses produce a buildup of electrostatic charges which can jump from the inner core of the hose to the outside braid of the hose. In those cases where this would be a concern, the conductive Teflon hose should be specified as opposed to the non-conductive hose.

Hose Cover Material

The most common hose cover, or braid, material is Grade 304 stainless steel. This particular grade of stainless has high levels of nickel which provides corrosion resistance.

Grade 316 Stainless is also frequently used and has many of the same traits as Grade 304 stainless with the major difference being the much higher level of molybdenum in it as compared to Grade 304. This results in even higher levels of corrosion resistance making this type of stainless useful in marine and other harsh environments.

Monel is another common hose cover material for corrosive environments. Monel is largely comprised of nickel and copper. Just as with Grade 304, the nickel content delivers corrosion resistance.

Application & Cleaning Products

While Teflon is chemically inert, it is wise to take the time to ensure that the fluid associated with the application, as well as the cleaning products, will not impact the PTFE / Teflon hose liner in any way.

Certification Requirements

As noted Teflon hose is a good choice for many hygienic applications such as food and beverage processing. In these types of applications, there are typically sanitary guidelines related to hoses that need to be understood.

About Seaway Fluid Power



Seaway Fluid Power (SFP), was established in 1976. Based in St. Catharines, Ontario, SFP provides its customers with quality fluid power products and services. SFP carries an extensive parts inventory of fluid power products such as hydraulics, pneumatics, hose and fittings, stainless steel fittings, instrumentation and compressed air.

“When there’s no time for downtime.”